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UNITED STATES HOUSE OF REPRESENTATIVES

HOUSE RESOURCES COMMITTEE

HEARING ON H.R. 39

ARCTIC COASTAL PLAIN DOMESTIC ENERGY SECURITY ACT OF 2003

TESTIMONY OF PETER VAN TUYN, Esq.

TRUSTEES FOR ALASKA

MARCH 12, 2003

Honorable Chairman, Members of the House Resources Committee, thank you for inviting me to testify before this Committee on the important subject of whether to allow oil drilling on the Coastal Plain of the Arctic National Wildlife Refuge. I recommend that this Committee not pass this proposed legislation. In the entire world, there are some special places that, because of their unique values, should be placed off-limits to industrial development, and the Arctic National Wildlife Refuge is one of them. Simply put, there can be no such thing as an "environmentally sound" drilling program on the Coastal Plain.[i]

I also provide my recommendation as an attorney with over a decade of experience working on oil and gas issues in Alaska. I work with Trustees for Alaska, which is a non-profit environmental public interest law firm. In this capacity, I have counseled and represented numerous Alaska-based and national conservation organizations, Native tribes, villages and other entities. On behalf of these clients, I have litigated numerous lawsuits concerning oil drilling activities in Alaska. I have reviewed, counseled and represented clients on innumerable state and federal administrative decisions authorizing oil drilling activities in Alaska. I am familiar with a wide range of federal and state proposed and enacted legislation concerning oil drilling activities in Alaska and elsewhere, and have counseled clients on the intent and legal effect of such legislation, specifically including legislative attempts to open the Coastal Plain of the Arctic Refuge to oil drilling.

Trustees itself was organized over a quarter century ago to provide counsel to protect and sustain Alaska's environment. Trustees has been involved in oil and gas issues in Alaska since the approval and construction of the Trans-Alaska Pipeline System, continuing through the devastating Exxon Valdez Oil Spill and on to today's debate over whether to open the Coastal Plain to oil drilling.[ii] There has not been a significant environmentally-related oil and gas issue in Alaska since Trustees' establishment on which it has not been involved. I thus also bring my law firm's significant institutional knowledge of these issues to the debate whether to authorize oil drilling in this pristine wilderness

With this recommendation and introduction, I now turn to the issue at hand. H.R. 39 was introduced to

establish and implement a competitive oil and gas leasing program that will result in an environmentally sound and job creating program for the exploration, development, and production of the oil and gas resources of the Coastal Plan, and for other purposes.

The Chairman noted in his kind invitation to testify that the Committee members would be interested in hearing the witnesses' perspectives on

[t]he bill's provisions to regulate oil and gas leasing on the coastal plain, [] the contribution of ANWR's potential oil and gas resources to the nation's energy supply and to the economy, and in possible impacts of such development on affected Alaskan communities, wildlife and the environment.

In addressing these issues in my testimony, I begin by discussing whether it is even possible to have an "environmentally sound" oil drilling program. Opening any area of pristine land to oil drilling inalterably harms the intangible values that help make it so special. Also, history and common sense reveal that oil drilling is guaranteed to degrade tangible values. To make this point, I address development in other portions of America's Arctic, and discuss the oft-repeated proposition that new technology allows for environmentally-benign oil drilling and associated activities.

Recognizing that opening the pristine Coastal Plain to oil drilling inevitably will result in irreparable degradation has not, however, deterred those who support such drilling. While drilling proponents do not often address the inevitable damage that occurs from oil drilling to intangible values, they do state that damage to tangible values can be reduced to negligible levels through provisions of law like those included in H.R. 39. Yet, as discussed below, no credible claim can be made that oil drilling "will result in an environmentally sound ... program for the exploration, development, and production" of any oil under the Coastal Plain.

Moreover, the vast majority of America's Arctic is open to, and being aggressively explored and exploited for, its oil and gas resources. To put the debate over oil drilling on the Coastal Plain in its appropriate context, I provide information on the lands currently available for oil and gas exploration or development in America's Arctic.

To also put the potential oil resources of the Arctic Refuge's Coastal Plain in context, I reference recent estimates of the extent of those resources and how they relate to oil imports in the United States, and compare that to how an increase in automobile fuel efficiency would impact oil consumption and imports.

Oil drilling has also had dramatic effects on local communities throughout America's Arctic, and further drilling will exacerbate such impacts. I address this issue in the final section of my testimony.

"The Essential Trade-Off"

A Pristine Environment Or Oil and Gas Development

Oil drilling harms both the intangible wilderness values of pristine environments, as well as more tangible wildlife and other values. No more need be said about the importance of protecting the intangible values of the Coastal Plain from industrialization than that said in this quote from United States Supreme Court Justice William O. Douglas:

The Arctic has a strange stillness that no other wilderness knows. It has loneliness too – a feeling of isolation and remoteness born of vast spaces, the rolling tundra, and the barren domes of limestone mountains. This is a loneliness that is joyous and exhilarating. All the noises of civilization have been left behind; now the music of wilderness can be heard. The Arctic shows beauty in this bareness and in the shadows cast by clouds over empty lands. The beauty is in part the glory of seeing moose, caribou, and wolves living in natural habitat, untouched by civilization. It is the thrill of seeing birds come thousands of miles to nest and raise their young.

. . .

The Arctic has a call that is compelling. The distant mountains make one want to go on and on over the next ridge and over the one beyond. The call is that of wilderness known only to a few. It is a call to adventure. This is not a place to possess like the plateaus of Wyoming or the valleys of Arizona; it is one to behold with wonderment. It is a domain for any restless soul who yearns to discover the startling beauties of creation in a place of quiet and solitude where life exists without molestation by man.[iii]

As for impacts to tangible values, one need only look to the large part of the terrestrial portion of America's Arctic that has been committed to the development of its oil and gas resources. At present, the oil industry sprawls across more than 1,000 square miles of the North Slope; an area roughly the size of Rhode Island. This huge industrial complex, which literally can be seen from space, includes production pads and facilities, gravel roads, airfields and pipelines.[iv]

The oil industry on Alaska's North Slope annually emits approximately 70,000 tons of nitrogen oxides, which contribute to smog and acid rain.[v] This is more than twice the amount emitted by Washington, DC.[vi] Other

regulated pollutants include 1,470 tons of sulfur dioxide, 6,199 tons of particulate matter, 11,560 tons of carbon monoxide, and 2,647 tons of volatile organic compounds annually.[vii] North Slope oil facilities release greenhouse gases, including 24,000 metric tons of methane, and 7 to 40 million metric tons of Carbon Dioxide, annually.[viii] Prudhoe Bay air emissions have been detected nearly 200 miles away in Barrow, Alaska.[ix] According to the National Academy of Sciences, it is not clear that air quality standards are sufficient to protect arctic vegetation, and monitoring of such ecological effects is not taking place.[x]

There are more than 90 oil industry-related contaminated sites in America's Arctic. Nearly half of the 328 exploration and production drilling waste reserve pits still need to be closed out.[xi] Gravel pads contaminated by spills of oil, diesel, and other toxic substances are a long-term restoration problem, and recognized liability issue for the oil companies.[xii]

Up to 1.5 billion gallons of water a year is used for building ice roads, pads, and drilling. Removing winter water can change the natural character of lakes and harm the organisms depending on it for habitat, migration, and food.[xiii]

These impacts come from technology both new and old. A discussion of the impacts of the "hallmark" Alpine oil field, which lies in the floodplain of the Colville River Delta to the west of Prudhoe Bay and other oil fields, serves to illustrate this point. [xiv] As ARCO stated, "we'll develop Alpine from just two drill sites of less than 115 acres," it will have the "smallest footprint ever." [xv] With statements like this, drilling proponents thus point to the Alpine oil field as evidence that a new approach to drilling could take place in the Arctic Refuge without disturbing its incredible natural qualities. Yet the facts of Alpine tell a quite different story.

The original Alpine development site consists of two drilling pads, a runway for jet airplanes, three miles of in-field roads and other facilities that directly cover 100 acres of tundra.[xvi] It also includes 3-miles of in-field gathering pipeline,[xvii] 34-miles of "sales" pipeline from Alpine to Kuparuk,[xviii] and a 150-acre gravel mine.[xix] The area in the Delta impacted by this development, based on a four-kilometer zone of influence around such developments,[xx] is over 80 square miles. This area calculation does not take into account the land impacted by the over 30 miles of Alpine sales pipeline to the east of the Delta.

One reason drilling proponents say that Alpine is a "model" oil field is because the industry uses ice roads instead of gravel roads to meet some of its access needs. Ice roads are not, however, without impacts. For example, fresh water withdrawals for ice roads and other necessary purposes such as drilling, camp use and other purposes come from 52 lakes, as much as 141 million gallons per year. During Alpine exploration in 1996, 65 million gallons of freshwater were used during a single year.[xxi]

Such massive water withdrawal could decimate fish populations or alter bird and wetland habitats even in the relatively wet areas of the North Slope, especially because the oil industry uses this vast quantity of water with little to no environmental oversight or long-term monitoring.[xxii] In contrast to the Colville Delta, a look at a map of America's Arctic readily shows that freshwater resources on the Coastal Plain of the Arctic Refuge are extremely limited, especially during the winter when ice roads are constructed.[xxiii] As such, winter water withdrawals on the Coastal Plain could be catastrophic to fish and wildlife species.

Furthermore, if permanent gravel roads are not built, then access during summer is by aircraft. For Alpine, during construction in June and July 2001, as many as 1,980 flight take-offs and landings in 45 days during the migratory bird nesting season[xxiv] compared with the 13 round trips per month discussed in 1997 project descriptions.[xxv]

During Alpine's construction, the field operator lost 2.3 million gallons of drilling muds while tunneling under the Colville River. While they claimed this huge, unanticipated loss of this lubricant did not harm the environment, they "didn't do anything" to determine if the drilling muds filtered up from beneath the river and actually seeped into the river itself.[xxvi]

Gas flaring episodes at the Alpine oil field lasting longer than one hour exceeded quantities released in such upsets at all the other North Slope oil fields combined in 2000.[xxvii] Alpine is located only 7 miles from Nuiqsut. Adverse human health effects from chronic exposure to repeated flaring discharges have been observed for people living or working near flaring in Canada and from offshore development near Los Angeles.[xxviii] According to a Canadian study, adverse impacts may occur at distances ranging from 0.2 – 35 km from the flaring.

Yet, in permitting Alpine to proceed, federal regulators did no in-depth environmental review of Alpine, claiming that its impacts were simply not significant, and dismissing the inevitable future development spawned by Alpine's presence and common carrier pipeline as "speculative," "conjectural," and "not reasonably foreseeable." [xxix] This view of Alpine

was supported by then-Senator Murkowski as well:

You can see that is a whole oilfield. That is it... You know there is one thing you see and you see a little airstrip and that is all. There is no road out of there. There is a[n] ice road in the wintertime, but in the summertime you have to fly to get in and out of there. . . . That is the technology we have. So it is an entirely different set of circumstances. To suggest that somehow this would be an expanse covering hundreds of miles, with airports and so forth, is totally inaccurate...[xxx]

In 2003, ConocoPhillips, which had taken over the Alpine field from ARCO, announced plans for developing fifteen additional drill sites including 10 satellite sites that are expected to connect to Alpine. Once the new satellites are constructed, the Alpine Project will include 25 miles of permanent gravel roads, 19 miles of which would be on the NPR-A, two airstrips, a 150-acre gravel mine, and 60 miles of pipelines. The Alaska Department of Transportation is also studying building a new permanent road to the village of Nuiqsut just south of Alpine.[xxxi] and Governor Murkowski has promoted its usefulness for new oil field development.” [xxxi]

What happens when an oil facility is no longer needed also demonstrates that once an area is committed to oil drilling, it will never again return to its pre-drilling natural state. The National Academy of Sciences recently analyzed the history of North Slope development and assessed how much of the area had been rehabilitated. NAS defined rehabilitated as areas “no longer definable as clearly disturbed ... or areas that now provide functional habitat but might be different from the original.”[xxxiii] NAS found that “[i]n most cases, ... areas were not restored to their former condition” and that “[r]ehabilitation to some degree has occurred only on about 195 acres – about 1% -- of gravel pads.”[xxxiv]

Disturbingly, NAS also found that

[e]xisting state and federal laws and regulations governing surface restoration lack clear definitions and standards, and they overlap in potentially conflicting ways. The lack of definitions in the relevant statutes and regulations of clear restoration goals makes it difficult to plan and design restoration activities.[xxxv]

The facts thus show that oil drilling, no matter the technology employed, involves inevitable environmental degradation. As a conclusion to its review of existing data concerning the cumulative effects of oil and gas activities on Alaska’s North Slope, the National Academy of Sciences acknowledged just this reality in its section aptly titled “The Essential Trade-Off”:

The effects of North Slope industrial development on the physical and biotic environments and on the human societies that live there have accumulated, despite considerable efforts by the petroleum industry and regulatory agencies to minimize them. . . . Continued expansion is certain to exacerbate some existing effects and to generate new ones [I]f wise decisions are to be made, the nature and extent of undesirable effects likely to accompany future activities must be fully acknowledged and incorporated into regulatory strategies and decision-making.[xxxvi]

Existing And Proposed Environmental Regulation Of Oil Drilling Is Not Stringent

The oil industry has always enjoyed special treatment in the form of exemptions from environmental regulations that apply to the exact same pollution originating from different industrial sources. These exemptions belie any promise that oil industry activities will be held to the highest possible environmental standards. Moreover, H.R. 39 itself disingenuously deals with the fact that, as discussed above, there can be no such thing as a truly “environmentally sound” oil drilling program. And it also continues the disturbing trend of oil industry exemptions and massive discretion to regulators that is evident both in fundamental environmental laws and in previous drill-the-refuge bills.

Environmental laws not addressed in H.R. 39 greatly influence how oil drilling can be conducted. For example, Congress exempted certain oil and gas extraction wastes from regulation as hazardous wastes under the Resource Conservation and Recovery Act (RCRA), pending an EPA study.[xxxvii] Trustees for Alaska sued EPA to force it to do the study. When the agency finally completed the study in late 1987 during President Bush’s Administration, it determined that regulation of such wastes was not warranted.[xxxviii]

The RCRA exemption gives special treatment to the high volumes of oil production wastes, such as drilling muds and cuttings, oil rig wastes, produced water, and associated wastes, including tank bottoms, pit sludges, and well work-over wastes. If these wastes were produced by any other industry, such as dry cleaners, they would be regulated as hazardous wastes with special precautions taken.[xxxix]

Anticipating that an informed public would pressure companies to reduce emissions, in 1986 Congress enacted the

Emergency Planning and Community Right-To-Know Act. The Act requires certain polluters to report annually their toxic releases for inclusion in a Toxic Release Inventory, a database maintained by EPA and made available to the public. The database has been used to support calls for stronger regulations, and to publicize local polluters, as well as to prepare communities for accidental releases of toxic substances. Some financial advisors even use the database to screen companies for investors.[xl]

The oil industry, however, is largely exempt from reporting oil field wastes to EPA for inclusion in the Toxic Release Inventory.[xli] In 1996, the industry was successful in its lobbying efforts to ensure that most oil field exploration and production facilities were exempted from EPA regulations that addressed the kind of industries required to submit yearly "right-to-know" reports.[xlii] The exemption covers toxic air pollutants produced in oil field operations in America's Arctic, including lead and known carcinogens such as polycyclic aromatic hydrocarbons, benzene, and xylene.

Finally, just two days ago, new Clean Water Act regulations went into effect concerning storm water run off from small construction sites. The Environmental Protection Agency, claiming it had conflicting information about the environmental effects of oil industry construction sites, relegated the issue to the black hole dustbin of "further study is needed." As they now stand, therefore, these new rules apply to small communities and small construction projects in every sector of the economy but the oil industry.[xliii]

Turning to the provisions of H.R. 39 itself, this tradition of lax regulation of oil industry operations continues. There are multiple elements of the bill that refute the claim that drilling would be done in an environmentally sensitive manner, including the following:

- * it exempts a large part of a leasing program from the environmental review and public participation provisions of the National Environmental Policy Act, Subsections 2(c)(2) and (3);
- * it uses weaker standards for the protection of the wildlife and wilderness character of the Refuge than exist in laws that apply elsewhere, Subsection 3(a) and Section 6;
- * it fails to mandate almost any specific environmental protection for the Coastal Plain, relying instead on the discretion of the Secretary of the Interior to impose such protections, Sections 6 and 7;
- * it eliminates the fundamental "compatibility" standard which is at the heart of National Wildlife Refuge management, wherein activities that impair Refuge purposes cannot be allowed, Subsection 3(c)(1);
- * it contains weaker restoration standards and financial assurances than exist in other laws, Subsection 6(a)(5);
- * it may limit the authority currently available under key provisions of the Endangered Species Act and National Wildlife Refuge System Administration Act to close areas in the Refuge for important protective reasons, Subsection 3(f);
- * it raises the bar on judicial review of the Secretary's decisions to such a high level as to significantly limit the traditional check placed on the executive branch by the judiciary, Section 8;
- * it is ambiguous as to whether the Fish and Wildlife Service (the nation's wildlife experts) or the Bureau of Land Management (the mineral development experts) administers the leasing program, Subsection 3(a).

The Vast Majority Of America's Arctic Is Available For Oil Exploration Or Drilling

The State and Federal governments are also aggressively offering lands to oil companies across the North Slope and in the Beaufort Sea. Secretary of the Interior Gale Norton plans massive lease sales in the Arctic Ocean and in the Western Arctic. The Beaufort Sea Outer Continental Shelf (OCS) lease sales encompass up to 9.8 million acres,[xliv] and an additional 181,757 acres have already been leased. In the National Petroleum Reserve-Alaska, over 4 million acres were offered for lease in the Northeast Area,[xlv] and plans for leasing up to 8.8 million acres in the Northwest Area are currently under consideration.[xlvi] BLM plans to start the lease planning process for the last large segment of NPR-A, the South Planning Area, in January, 2004.[xlvii]

BLM has announced plans to begin reconsidering the status of the Teshekpuk Lake Surface Protection Area, which includes areas deleted from leasing by the 1998 Northeast Area Plan decision, with a plan amendment process to begin in 2003.[xlviii] In October 1998, Interior Secretary Bruce Babbitt authorized oil and gas leasing in 87% of the Northeast corner. Although he deleted about 593,000 acres in the Teshekpuk Lake area from leasing and put a five to six mile wide "no-surface occupancy" buffer zone around its south and west side, seismic oil exploration continues to

be allowed in this sensitive area. Now, BLM is considering industry's requests for leasing in the deleted area, and to eliminate buffer zones and other mitigation stipulations.

Existing leases cover 4.2 million acres of State of Alaska land on the North Slope and adjacent Beaufort Sea. [xlix] The State plans to hold annual lease sales covering 14.1 million acres of lands in the Arctic (including the North Slope Area-wide, North Slope Foothills Area-wide, and Beaufort Sea Area-wide sales).[l] Just this state-owned acreage is larger than nine different states, including New Hampshire, Connecticut and New Jersey.

Finally, the Arctic Slope Regional Corporation has exploration lease agreements with oil companies on at least 3.3 million acres on the North Slope, outside the Arctic Refuge.[li]

Drilling The Refuge Would Do Little To Reduce U.S. Oil Imports;

Increasing Fuel Efficiency Would Do A Lot

Oil from the Arctic Refuge would not make a dent in our need to import oil. The U.S. Geological Survey has concluded that the refuge holds less economically recoverable oil than the U.S. consumes in six months. Top oil company officials have acknowledged that it would most likely take a decade or more of exploration and development before any oil from the refuge would become available. In February 2002, the Department of Energy's Energy Information Administration concluded that drilling in the Refuge would only reduce oil imports from 62% to 60% of our total oil supply at its peak of production in 2020.[lii]

The U.S. could move toward energy independence by investing in conservation and renewable energy efforts. Requiring fuel-efficient replacement tires on automobiles would save about 5.8 billion barrels of oil. Raising fuel economy standards by 60 percent would save 50 billion barrels of oil, more than one order of a magnitude greater than the oil projected to lie beneath the Coastal Plain.[liii]

Adverse Impacts Of Oil Development On Alaskan Communities

To be sure, residents of the State of Alaska have benefited, and given the intense and aggressive industrial expansion on the North Slope, will continue to benefit, from oil development in Alaska. [liv] And yet, oil is a finite resource, and one day we will be forced to look beyond petrochemicals to fuel our country. What, then, will be left for those people who live in the Arctic?

Rather than speak for others, perhaps it is best to let them speak for themselves. What follows is a sampling of comments from residents of communities impacted by existing oil industry operations and residents of communities that stand to be impacted if oil drilling were allowed on the Coastal Plain of the Arctic National Wildlife Refuge.

Development has increased the smog and haze in our air and sky, affecting our health as well as the beauty of our land, sea, and air.

City of Nuiqsut Council Members, 2001.[lv]

How many wells are out there pumping away already? How many blowoffs, the flares, do we have to watch every year? They say they're only going to be there 30 days out of the year. But that's what they say for these statements. In actuality, we see it. You can count the flares from here...

What is put out from those flares comes back to us. We have to see it. Our air has changed. The health of our people has changed. We have a lot more health problems than years ago... Day after day I have to see asthma patients.... Let's see how many of our young children are going to be sick, having trouble breathing, when we've got 12 flares blowing all at once...

Rosemary Ahtuanguaruk, Health Aide, Nuiqsut, 1998.[lvi]

The cumulative impacts of all the developments leading to the surrounding or "boxing in" of the community by oil and gas development on all sides is devastating to the hopes and aspirations of our community members... Prudhoe Bay oil development has caused Nuiqsut residents to cease virtually all subsistence activities to the east of the community.

City of Nuiqsut, 2001.[lvii]

We are caribou people. Oil development in the birthplace and nursery grounds of the Porcupine Caribou Herd would hurt the caribou and threaten the future of the Gwich'in.

Sarah James, Gwich'in Steering Committee

It is our belief that the future of the Gwich'in and the future of the caribou are the same. We cannot stand by and let them sell our children's heritage to the oil companies.

Jonathan Solomon, Gwich'in Steering Committee.[lviii]

Conclusion and Recommendation

I have stood in both the pristine and industrialized parts of America's Arctic and gazed out to the Arctic Ocean. The contrast between that part of America's Arctic that has been committed to the oil industry and that part which remains pristine is dramatic and unquestionable. Oil drilling and pristine environments simply do not mix. As an American who greatly values our nation's public lands, lands that belong to all Americans, I urge you not to pass out of Committee legislation that would open to oil drilling this last remaining truly pristine piece of America's Arctic.

[i] For their invaluable assistance in preparing this testimony and related illustrations and exhibits, I would like to thank Pamela A. Miller, Arctic Connections, Stan Senner, National Audubon Society, David Pray, Conservation GIS Center and Tom Ofchus and the rest of the employees of Trustees for Alaska.

[ii] A small sampling of reported judicial opinions supporting this point include: *Edwardson v. DOI*, 268 F.3d 781 (9th Cir. 2001); *Trustees for Alaska v. DOI*, 919 F.2d 119 (9th Cir. 1990); *Trustees for Alaska v. Hodel*, 806 F.2d 1378 (9th Cir. 1986); *Cook Inlet Keeper v. Alaska*, 46 P.2d 957 (Alaska 2002); *Gwich'in Steering Committee v. Office of the Governor*, 10 P.3d 572 (Alaska 2000); *Trustees for Alaska v. DNR*, 865 P.2d 745 (Alaska 1993); *Trustees for Alaska v. DNR*, 851 P.2d 1340 (Alaska 1991).

[iii] *My Wilderness* at 9-10, Doubleday & Company, Inc., Garden City, New York (1960).

[iv] See e.g., *Cumulative Environmental Effects Of Oil and Gas Activities on Alaska's North Slope*, National Academy of Sciences (NAS Report) at 3, 52-80, 227 (March 2003).

[v] U.S. Army Corps of Engineers. 1999. Final Environmental Impact Statement, Beaufort Sea Oil and Gas Development/ Northstar Project. Vol. III, Table 5.4-6, data from ARCO and BPXA, 1994, as reported to Alaska Department of Environmental Conservation. Emissions estimates based on fuel consumption for Prudhoe Bay, Endicott, Lisburne and Kuparuk oil field main production facilities but does not include Alpine, Badami, Pt. McIntyre oil fields, Tarn, Northstar or four Trans-Alaska Pipeline Pump Stations, nor emissions from drill rig engines or vehicles.

[vi] EPA. March 2000. National Air Pollutant Emissions Trends: 1900-1998. www.epa.gov/ttn/chieff/trends98/emtrnd.html. DC- 23,000 short tons (Table 2.2).

[vii] U.S. Army Corps of Engineers. June 1999. Final Environmental Impact Statement Beaufort Sea Oil and Gas development/Northstar Project. Volume III, Table 5.4-7.

[viii] Jaffe, D.A., R.E. Honrath, D. Furness, T.J. Conway, E. Dlugokencky, and L.P. Steele. 1995. A determination of the CH₄, NO_x, and CO₂ emissions from the Prudhoe Bay, Alaska oil development. *Journal of Atmospheric Chemistry* 20: 213-227.; Brooks, S.B., T.L. Crawford, and W.C. Oechel. 1997. Measurement of carbon dioxide emissions plumes from Prudhoe Bay, Alaska oil fields. *Journal of Atmospheric Chemistry* 27: 197-207.

[ix] Jaffe, D.A. R.E. Honrath, D. Furness, T.J. Conway, E. Dlugokencky, and L.P. Steele. 1995. A determination of the CH₄, NO_x and CO₂ emissions from the Prudhoe Bay, Alaska Oil Development. *Journal of Atmospheric Chemistry* 20: 213-227.

[x] NAS Report at 141.

[xi] NAS Report at 151.

[xii] NAS Report at 148.

[xiii] NAS Report at 77.

[xiv] It is noteworthy that the promises of technology like those made for Alpine are nothing new. As long ago 1978,

BP espoused the promise of new technology in minimizing environmental impacts:

Directional drilling, ideally suited for North Slope operations, enables the [oil] reservoir to be tapped more than one mile from the pad... no unsightly drilling rigs are left to mar the landscape; they are moved as soon as their task is done. Only a relatively small system of flow lines will be installed above ground to carry the oil from each well to the gathering centers. Formal cleanup programs keep Prudhoe Bay part of the wilderness.

BP Alaska Inc, North Slope Alaska: Man and the Wilderness, p.23 (1978). It is hard to imagine anyone looking at Prudhoe Bay today and seeing wilderness.

[xv] ARCO, Discovering the Future (1998).

[xvi] Specifically, the development includes Alpine Pad #1 (main production pad, drill site, housing, storage area) – 36.3 acres; Alpine Pad #2 (drilling site) – 10.1 acres; in-field roads (3-miles long) – 14.6 acres; airfield – 35.7 acres; other (culverts, etc.) – 1.7 acres. See U.S. Army Corps of Engineers Alaska District, Permit Evaluation and Decision Document, Alpine Development Project, Colville River 18 (2-960874), p. 2 (February 13, 1998).

[xvii] Arco Alaska Inc. et al., Revised Alpine Development Project: Environmental Evaluation Document, pp. 2-13 (September 1997).

[xviii] U.S. Army Corps of Engineers Alaska District, Permit Evaluation and Decision Document, Alpine Development Project, Colville River 18 (2-960874), p. 3 (February 13, 1998).

[xix] U.S. Army Corps of Engineers Alaska District, Colville River 17 (4-960869) to Nuiqsut Constructors (Alpine gravel pit) (June 24, 1997).

[xx] Nellemann, C., and R.D. Cameron, Cumulative Impacts Of An Evolving Oilfield Complex On Calving Caribou, Canadian Journal of Zoology, 76:1425-1430 (1998).

[xxi] U.S. Army Corps of Engineers Alaska District, Public Notice of Application for Permit, Colville River 18 (2-960874), pp. 2-3 (April 7, 1997).

[xxii] Letter from Trout Unlimited Alaska Salmonid Biodiversity Program to Alaska Governor Tony Knowles (May 7, 2001).

[xxiii] U.S. Department of the Interior, Draft Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, Report and Recommendations to the Congress of the United States and Legislative Environmental Impact Statement ("LEIS"), p. 21 (November 1986); U.S. Department of the Interior, Final LEIS, p. 13 (April 1987).

[xxiv] Johnson, C.B., B.E. Lawhead, D.C. Payer, J.L. Petersen, J.R. Rose, A.A. Stickney, and A.M. Wildman. May 2001. Alpine avian monitoring program, 2000. Third annual report. Prepared for Phillips Alaska, Inc. and Kuukpik Unit Owners. ABR, Inc. Fairbanks. P. I.

[xxv] ARCO Alaska, Inc., Anadarko Petroleum Corporation, and Union Texas Petroleum. September 1997 (revised). Alpine Development Project: Environmental Evaluation Document. Table 2.3.1.

[xxvi] Associated Press, Alpine Drilling Revised, Anchorage Daily News, page D6 (October 2, 1998).

[xxvii] Bodron, D. 2003. Information on 2000 flaring (Gas2000 North Slope.xls; Re 2000 flaring.rtf) from Wendy Mahan, Alaska Department of Natural Resources, April 6, 2001.

[xxviii] Argo, J. 2001. Unhealthy effects of upstream oil and gas flaring. A report prepared for Save Our Seas and Shores, for presentation before the Public Review Commission into effects of potential oil and gas exploration, drilling activities within Licences 2364, 2365, 2368. Sydney, Nova Scotia, January 18, 2002. IntraAmericans Centre for Environment and Health, Wolfe Island, ON, Canada.

[xxix] U.S. Army Corps of Engineers Alaska District, Permit Evaluation and Decision Document, Alpine Development Project, Colville River 18 (2-960874), p. 30, 31 (February 13, 1998).

[xxx] Senator Frank Murkowski. April 17, 2002. Congressional Record. Pp. S2867-2868.

[xxxi] Petroleum News Alaska. September 29, 2002. Road to NPR-A.

[xxxii] Governor Frank Murkowski. Speech to Arctic Power (February 14, 2003). Anchorage Daily News. February 15, 2003. Oil called key to budget balance, Ideas: Governor floats notions including road across the Slope.

[xxxiii] NAS Report at 144.

[xxxiv] Id.

[xxxv] NAS at 146; see also U.S. General Accounting Office, Alaska's North Slope, Requirements for Restoring Lands After Oil Production Ceases. GAO-02-357 (June 2002).

[xxxvi] NAS Report at 21.

[xxxvii] Section 8002(m) of RCRA, 40 U.S.C. Section 6982(m). For more details on this exemption see NRDC, et al., Tracking Arctic Oil: Background Technical Document, (1991), p. 25.

[xxxviii] 53 Fed. Reg. 11 (Jan. 4, 1988) (report to Congress); 53 Fed. Reg. 25446 (July 6, 1988) (regulatory determination).

[xxxix] See 40 CFR § 261.4(b)(5) (1990).

[xl] New York Times, "The Nation's Pollution: Who Emits What, and Where," October 13, 1991, p. F10.

[xli] Emergency Planning and Community Right to Know Act, Section 313, Title III, Superfund Amendments and Reauthorization Act of 1986, 42 USC § 11023.

[xlii] Offshore Magazine 57(5), "Activity review of US regulatory, legislative issues," May 1, 1997.

[xliii] 40 C.F.R. Part 122; see also Lee, Oil and Gas Industry Exempt From New Clean Water Rules,, New York Times (March 8, 2003).

[xliv] U.S. Minerals Management Service. February, 2003. Beaufort Sea Planning Area, Sales 186, 195, and 202, Final Environmental Impact Statement. OCSs EIS/EA MMS 2003-001.

[xlv] U.S. Secretary of the Interior Bruce Babbitt. October 7, 1998. Northeast National Petroleum Reserve-Alaska: Integrated activity plan/ Environmental Impact Statement. Record of Decision.

[xlvi] U.S. Department of the Interior. January 2003. Northwest National Petroleum Reserve-Alaska, Draft Integrated activity plan/ environmental impact statement. Anchorage.

[xlvii] Bureau of Land Management. January 8, 2003. Alaska Ten-Year Planning Schedule. Anchorage.

[xlviii] Alaska Oil & Gas Reporter. February 16, 2003. BLM reviews NPR-A restrictions.

[xlix] State of Alaska, Department of Natural Resources. December 17, 2002. Active Oil and Gas Lease Inventory. <http://www.dog.dnr.state.ak.us/oil/products/publications/oginventory/oginventory.htm>.

[l] State of Alaska, Department of Natural Resources. January 2003. Five-Year Oil and Gas Leasing Program.

[li] Arctic Slope Regional Corporation. 2003. Lease Exploration Agreement on lands between Colville and Canning Rivers. www.asrc.com

[lii] Energy Information Agency, The Effects of the Alaska Oil and Natural Gas Provisions of HR 4 and S. 1766 on U.S. Markets, February 2002.

[liii] Natural Resources Defense Council, A Responsible Energy Policy for the 21st Century, App. A (March 2001).

[liv] On this point it is noteworthy that H.R. 39 does not contain a revenue allocation provision. Thus, revenues from oil leasing and production would be split 90/10 between the State of Alaska and the United States, respectively. Previous Coastal Plain drilling bills include a 50/50 revenue allocation, as does leasing within the National Petroleum Reserve – Alaska. See H.R. 4 Section 6512; CRS Report IB10111 at 9.

[lv] Letter to National Research Council submitted by Vice-Mayor R. Ahtuanguaruak (April 11, 2001). Nuiqsut is located on the Colville River south of the Alpine development.

[Ivi] U.S. Army Corps of Engineers. 1999. Final Environmental Impact Statement, Beaufort Sea Oil and Gas Development/ Northstar Project. Appendix K. Testimony from Nuiqsut public hearing, July 30, 1998,p. 47-48.

[Ivii] City of Nuiqsut. 2001. NPR-A grant information, submitted by R. Ahtuanguaruak to National Research Council on April 5, 2001.

[Iviii] See also NAS at 238.